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A STUDY OF THE CLUSIODIDÆ, (HETERONEURIDÆ) OF THE EASTERN UNITED STATES.

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Since the publication of the "Revision der Heteroneuriden" by P. Leander Czerny (Wien. Ent. Zeit. XXII, 61, 1903), it has been apparent to the writer that there were many discrepancies and errors in the determination of the American species. The want of material, however, has caused me to hesitate in attempting to define our species more clearly. It seems imperative that these errors should be corrected and brought to the attention of future workers.

The species seem to separate quite readily into the genera described by Czerny and Coquillett, based on the arrangement of the cephalic bristles, and later tabulated by Dr. Williston in his "Manual of North American Diptera."

Clusiodes Coquillett.

For the genus *Heteroneura* Fallen 1823, not 1810, Coquillett proposed the genus *Clusiodes* 1904, Type *H. albimana* Meigen. The four species belonging to this genus may be tabulated as follows:

1. Wing with the clouding on the anterior portion confined to the apical third . . . 2
Wing with the clouding extending from the end of the first vein *geomyzina* Fall.
2. Legs with the anterior tarsi more or less black 3
Legs entirely yellow; face of the ♂ black *melanostoma* Loew.
3. First, or the first two anterior tarsal joints black, the others white
albimana Meig.
All of the anterior tarsal joints in the ♀ and the last three or four joints in
the ♂ black *pietipes* Zett.

Clusiodes geomyzina Fallen.

Heteroneura geomyzina Fall., Agromyz. 2. 2. 1823; Czerny, Wien. Ent. Zeit., XXII, 77, Taf. I, f. 1, 2 and 4, 1903.

One specimen was taken by the writer at Machias, Me., July 19, 1909, the first American record.

Clusiodes melanostoma Loew.

Heteroneura flavifacies Coq. ms. in Mrs. Slosson's List of Mt. Washington Insects, Ent. News, VIII, 239, 1897, not "Smith's New Jersey Cat.," as stated in Aldrich's Cat., p. 570.

The fourteen specimens before me show the following distribution: Maine—Northeast Harbor, July 12 (Dr. C. S. Minot) and Machias, July 19, 21 (C. W. J.); New Hampshire—Franconia and Mt. Washington (Mrs. Slosson); Vermont—Norwich, July 7, and Mt. Ascutney, July 11; Massachusetts—Auburndale, June 15, 21, Mt. Greylock, June 15, and Chester, May 26, 28 (C. W. J.); Montreal, Can., July 14, (Beaulieu).

Clusiodes albimana Meigen.

Thirteen specimens show the following distribution: Maine—Capens, Moosehead Lake, July 14 (C. W. J.); New Hampshire—Intervale, August 23 (G. M. Allen); Vermont—Burlington, June 24, St. Johnsbury, July 28, Norwich, July 8, Mt. Ascutney, July 11, and Manchester, June 4; Massachusetts—Washington, August 8, Bash Bish Falls, June 27 (C. W. J.); New Jersey—Delaware Water Gap, July 12; Canada—Rouville County, Quebec (G. Chagnon).

Clusiodes pictipes Zetterstedt.

Mt. Washington, N. H., Coquillett in Mrs. Slosson's List of Mt. Washington Insects (Ent. News, VIII, 239, 1897). The occurrence of this species in North America is somewhat doubtful.

Heteromeriingia Czerny.

The following species, placed under this genus, are distinguished by the absence of frontal cross bristles. The four species may be separated by the following table:

- | | |
|---|---------------------------|
| 1. Species in which yellow predominates | 2 |
| Species entirely black | 3 |
| 2. Thorax entirely yellow, cephalic bristles yellowish | <i>flaviseta</i> sp. nov. |
| Thorax with a large black lateral spot or stripe, cephalic bristles black | |
| | <i>latifrons</i> Loew. |
| 3. Anterior legs entirely yellow, posterior femora and tibiæ annulated; wing clouded beyond the end of the fifth vein | <i>annulipes</i> sp. nov. |
| Anterior tibiæ and tarsi, and apical half of the femora black; wing clouded before the end of the fifth vein | <i>nitida</i> sp. nov. |

Heteromeriugia latifrons Loew.

Heteroneura latifrons Loew., Wien. Ent. Monatsch., IV, 82, 1860.

Twelve specimens show the following distribution: Massachusetts—Auburndale, August 13, Weston, July 23, Chester, August 7; New Jersey—Delaware Water Gap, July 15; Pennsylvania—Lake Ganoga, North Mt., August 29.

Heteromeriugia flavisetæ, sp. nov.

Female: Face, cheeks and lower half of the occiput whitish, front and upper half of the occiput light yellow, antennæ and a space above their base, fulvous yellow, arista blackish; frontal and vertical bristles yellowish. Thorax, scutellum, and metanotum yellow, humerus, pleura and coxæ white. Abdomen yellow, the tip of the fourth, all of the fifth, and the dorsal portion of the sixth segment, brownish black, tip of the last segment margined with white, ovipositor yellow. Halteres and legs yellowish white. Wings yellowish hyaline, apical third slightly clouded, especially near the veins. Length 4 mm.

Two specimens. Holotype, New Brunswick, N. J., May 28 (Dr. J. B. Smith). Paratype, Ft. Lee, N. J. Types in the author's Collection.

Heteromeriugia annulipes sp. nov.

Face and cheeks white, lower part of the front and orbits yellow; upper part of the front, the vertex and occiput black, palpi and antennæ yellow, apical half of the third joint and arista dark brown. Thorax, upper half of the pleura, scutellum, metanotum, and abdomen, shining black; lower half of pleura, legs and halteres yellowish white; tip of the posterior femora and tibiæ annulated with dark brown. Wings hyaline, apical third, and a small area at the anterior cross-vein, and end of the discal cell, slightly clouded with smoky black. Length 3 mm.

One specimen, Murfreesboro, Hertford County, N. C., June 9, 1895. Type in the author's collection. This species resembles *Heteroneura flavipes* Will., but the annuli on the posterior legs and the apical clouding of the wing, which is entirely beyond the end of the fifth longitudinal vein, readily distinguish the species.

Heteromeriugia nitida sp. nov.

Male: Face yellowish, orbits whitish pruinose, cheeks shining black; front black, opaque, vertex shining; antennæ yellowish, tip of the third joint and arista dark brown. Thorax dull black, pleura and abdomen shining black; legs yellow, the anterior legs except the coxæ and basal half of the femora, black, base and tip of the posterior tibiæ dark brown. Halteres white. Wings smoky, darker along the anterior portion beyond the middle and near the cross veins. Length 3 mm.

The female differs but little from the male except that the front is entirely shining black. Length 3.5 mm.

Three specimens. Holotype and allotype from Goose Neck, near Long Branch, N. J., June 12, 1902. Paratype, Riverton, N. J., May 14. All are in the author's collection.

In the "Insects of New Jersey" this was erroneously referred to *Heteroneura pictipes* which it resembles superficially and, barring the absence of the frontal "cross bristles," agrees fairly well with the description of that species. It is also closely allied to *Heteromeringia nigrimana* Loew. but the shining black cheeks and white halteres seem to separate it from that species.

Clusia czernyi sp. nov.

Male: Upper half of the face black, orbits and lower half including the cheeks, white, proboscis and palpi white, front yellow, antennæ light yellow, arista and ocelli black. Thorax yellow, pleura with a wide, black, shining stripe extending from the neck to the base of the abdomen, the rest of the pleura and sternum yellowish white. Abdomen yellow with wide lateral stripes of black. Legs yellowish, base of the femora and the coxæ white, base of the posterior tibiæ brownish, halteres white. Wings grayish hyaline, with a middle and apical band of black, broadly connected by a band filling all of that portion of the marginal and submarginal cells. Length 5 mm.

Female: Face yellow with two black stripes extending from the base of the antennæ to the oral margin, tips of the palpi black. The broad lateral stripes of the abdomen are interrupted at the fifth segment. Ovipositor yellow. Length 6 mm. In other respects resembling the male.

Seventeen specimens. Holotype and allotype, Northeast Harbor, Me., July 1, 1909 (Dr. Charles S. Minot). In the collection of the Boston Society of Natural History. Paratypes, Northeast Harbor, Me., June 3, July 4, 19 and 23 (Dr. Minot), Eastport, Me., July 15, Mt. Equinox, Vt., June 5, Chester, Mass., May 25 and 27, and North Mt., Pa., June 8, 1898 (C. W. Johnson); Franconia, N. H. (Mrs. A. T. Slosson); Holland, N. Y., May 21 (M. C. Van Duzee); Sport Island, Sacandaga River, N. Y., June 16, 1910 (C. P. Alexander).

This species has been confused with *C. lateralis*, from which it can be readily separated by the double banding of the wings and the broader and more continuous lateral abdominal stripes. Both species have a similar distribution but *C. lateralis* usually appears somewhat later in a given locality. At Chester, Mass., *C. lateralis* was common in August but was not observed in May.

Clusia lateralis Walker.

Heteroneura spectabilis Loew., Wien. Ent. Monatschr. IV, 82.

The nineteen specimens before me show the following distribution: Maine—Northeast Harbor, July 4 (Dr. C. S. Minot); Vermont—Norwich, July 7, Burlington, June 23, and St. Johnsbury, June 27; Massachusetts—Auburndale, August 9, Chester, August 4-7, and Bash Bish Falls, June 27; Connecticut—Middletown, June 19; New Jersey—Riverton, July 6; Pennsylvania—Folsom, June 12, and Glenside, May 26 (C. W. Johnson); Canada, (Beaulieu), July 16.

Chætoclusia affinis sp. nov.

Male: Head light yellow, palpi and antennæ yellow, arista black, densely plumose, ocelli black. Thorax yellow, abdomen brownish, tip yellow. Legs yellow, anterior tibiæ and tarsi brown. Halteres yellow. Wings yellowish hyaline. Length 2.5 mm.

Female: Similar to the male except that the anterior tibiæ and tarsi are black and the abdomen shining with an obscure dorsal line and black tip. Length 3 mm.

Holotype, Riverton, N. J., June 18 (C. W. J.); allotype, Jamesburg, N. J., July 15 (J. B. Smith). Both in the author's collection.

The Jamesburg specimen was referred doubtfully to *Clusia flava* Meig. in Smith's Insects of New Jersey. The Fort Lee specimen also referred to that species is *H. flaviseta*. As this is the only American record for *C. flava*, it should be omitted from the list of North American Diptera.